



Ser. No. 09/151,612; Kohn *et al.*

SEQUENCE LISTING

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Suzuki, Koichi  
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Iishi, Ken  
Klinman, Dennis M  
Rice, John M

<120> IMMUNE ACTIVATION BY DOUBLE-STRANDED POLYNUCLEOTIDES

F4  
<130> 0079661/0502168

<140> US 09/151,612

<141> 1998-09-11

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<170> PatentIn version 3.1

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cactaatgga ctcgcacacg

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aattgcaacc gtggagtcc

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<213> Homo sapiens

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&lt;211&gt; 2016

&lt;212&gt; DNA

&lt;213&gt; Rattus sp.

&lt;400&gt; 19

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acagagtcgc cttcggggcca ggaaagggac caatcatgct ggatgagggtg gaatgcacag	300
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tgttcatcca ggtgacaggg cagggacatg gggacctgag cctctgtgcc cacacactga	540
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tgagagtgga cgctgagtgc atgcctgtcg tcagagactt cctcaggtac ttttactccc	660
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 gtaccagga gaccaatagt tccaagaccc cctccctctt tcctgtgcc tcaggggcct 1680  
 tcagcagctt ccgctgggc atccgcccct tctacctcac caactccact gacacggagt 1740  
 agatggtaca tctcagcggg ggggactcag acattcctgt gttccctcct tggcctccag 1800  
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<210> 20

<211> 574

<212> PRT

<213> Rattus sp.

<400> 20

Met Ala Leu Leu Trp Leu Leu Ser Val Phe Leu Leu Val Pro Gly Thr  
 1 5 10 15

Gln Gly Ala Lys Asp Gly Asp Met Arg Leu Val Asn Gly Ala Ser Pro  
 20 25 30

Ser Glu Gly Arg Val Glu Ile Phe Tyr Arg Gly Arg Trp Gly Thr Leu  
 35 40 45

Cys Asp Asn Leu Trp Asn Leu Leu Asp Ala His Val Phe Cys Arg Ala  
 50 55 60

Leu Gly Tyr Asp Asn Ala Thr Pro Ala Leu Asn Arg Val Ala Phe Gly  
 65 70 75 80

Pro Gly Lys Gly Pro Ile Met Leu Asp Glu Val Glu Cys Thr Gly Asn  
 85 90 95

Glu	Ser	Ser	Leu	Ala	Asn	Cys	Ser	Ser	Leu	Gly	Trp	Met	Val	Ser	His	100	105	110	
Cys	Gly	His	Glu	Lys	Asp	Ala	Gly	Val	Val	Cys	Ser	Asn	Asp	Ser	Arg	115	120	125	
Gly	Ile	His	Ile	Leu	Asp	Leu	Ser	Gly	Glu	Leu	Pro	Asp	Ser	Leu	Gly	130	135	140	
Gln	Ile	Phe	Asp	Ser	Gln	Gln	Asp	Cys	Asp	Leu	Phe	Ile	Gln	Val	Thr	145	150	155	160
Gly	Gln	Gly	His	Gly	Asp	Leu	Ser	Leu	Cys	Ala	His	Thr	Leu	Ile	Leu	165	170	175	
Arg	Thr	Asn	Pro	Glu	Ala	Gln	Ala	Leu	Trp	Gln	Val	Val	Gly	Ser	Ser	180	185	190	
Val	Ile	Met	Arg	Val	Asp	Ala	Glu	Cys	Met	Pro	Val	Val	Arg	Asp	Phe	195	200	205	
Leu	Arg	Tyr	Phe	Tyr	Ser	Arg	Arg	Ile	Glu	Val	Ser	Met	Ser	Ser	Val	210	215	220	
Lys	Cys	Leu	His	Lys	Leu	Ala	Ser	Ala	Tyr	Gly	Ala	Thr	Glu	Leu	Gln	225	230	235	240
Gly	Tyr	Cys	Gly	Arg	Leu	Phe	Val	Thr	Leu	Leu	Pro	Gln	Asp	Pro	Thr	245	250	255	
Phe	His	Thr	Pro	Leu	Glu	Leu	Tyr	Glu	Tyr	Ala	Gln	Ala	Thr	Gly	Asp	260	265	270	
Ser	Val	Leu	Glu	Asp	Leu	Cys	Val	Gln	Phe	Leu	Ala	Trp	Asn	Phe	Glu	275	280	285	
Pro	Leu	Thr	Gln	Ala	Glu	Ser	Trp	Leu	Ser	Val	Pro	Asn	Ala	Leu	Ile	290	295	300	
Gln	Ala	Leu	Leu	Pro	Lys	Ser	Glu	Leu	Ala	Val	Ser	Ser	Glu	Leu	Asp	305	310	315	320
Leu	Leu	Lys	Ala	Val	Asp	Gln	Trp	Ser	Thr	Ala	Thr	Gly	Ala	Ser	His	325	330	335	



Gly Asp Val Glu Arg Leu Val Glu Gln Ile Arg Phe Pro Met Met Leu  
340 345 350

Pro Gln Glu Leu Phe Glu Leu Gln Phe Asn Leu Ser Leu Tyr Gln Gly  
355 360 365

His Gln Ala Leu Phe Gln Arg Lys Thr Met Glu Ala Leu Glu Phe His  
370 375 380

Thr Val Pro Leu Lys Val Leu Ala Lys Tyr Arg Ser Leu Asn Leu Thr  
385 390 395 400

Glu Asp Val Tyr Lys Pro Arg Leu Tyr Thr Ser Ser Thr Trp Ser Ser  
405 410 415

Leu Leu Met Ala Gly Ala Trp Ser Thr Gln Ser Tyr Lys Tyr Arg Gln  
420 425 430

Phe Tyr Thr Tyr Asn Tyr Gly Ser Gln Ser Arg Tyr Ser Ser Tyr Gln  
435 440 445

Asn Phe Gln Thr Pro Gln His Pro Ser Phe Leu Phe Lys Asp Lys Leu  
450 455 460

Ile Ser Trp Ser Ala Thr Tyr Leu Pro Thr Ile Gln Ser Cys Trp Asn  
465 470 475 480

Tyr Gly Phe Ser Cys Thr Ser Asp Glu Leu Pro Val Leu Gly Leu Thr  
485 490 495

Thr Ser Ser Tyr Ser Asp Pro Thr Ile Gly Tyr Glu Asn Lys Ala Leu  
500 505 510

Ile Leu Cys Gly Gly Tyr Ser Val Val Asp Val Thr Thr Phe Ile Gly  
515 520 525

Ser Lys Ala Pro Ile Pro Gly Thr Gln Glu Thr Asn Ser Ser Lys Thr  
530 535 540

Pro Ser Leu Phe Pro Cys Ala Ser Gly Ala Phe Ser Ser Phe Arg Val  
545 550 555 560

Val Ile Arg Pro Phe Tyr Leu Thr Asn Ser Thr Asp Thr Glu

565

570

<210> 21

<211> 585

<212> PRT

<213> Homo sapiens

<400> 21

Met Thr Pro Pro Arg Leu Phe Trp Val Trp Leu Leu Val Ala Gly Thr  
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Gln Gly Val Asn Asp Gly Asp Met Arg Leu Ala Asp Gly Gly Ala Thr  
20 25 30

Asn Gln Gly Arg Val Glu Ile Phe Tyr Arg Gly Gln Trp Gly Thr Val  
35 40 45

Cys Asp Asn Leu Trp Asp Leu Thr Asp Ala Ser Val Val Cys Arg Ala  
50 55 60

Leu Gly Phe Glu Asn Ala Thr Gln Ala Leu Gly Arg Ala Ala Phe Gly  
65 70 75 80

Gln Gly Ser Gly Pro Ile Met Leu Asp Glu Val Gln Cys Thr Gly Thr  
85 90 95

Glu Ala Ser Leu Ala Asp Cys Lys Ser Leu Gly Trp Leu Lys Ser Asn  
100 105 110

Cys Arg His Glu Arg Asp Ala Gly Val Val Cys Thr Asn Glu Thr Arg  
115 120 125

Ser Thr His Thr Leu Asp Leu Ser Arg Glu Leu Ser Glu Ala Leu Gly  
130 135 140

Gln Ile Phe Asp Ser Gln Arg Gly Cys Asp Leu Ser Ile Ser Val Asn  
145 150 155 160

Val Gln Gly Glu Asp Ala Leu Gly Phe Cys Gly His Thr Val Ile Leu  
165 170 175

Thr	Ala	Asn	Leu	Glu	Ala	Gln	Ala	Leu	Trp	Lys	Glu	Pro	Gly	Ser	Asn	
		180						185					190			
Val	Thr	Met	Ser	Val	Asp	Ala	Glu	Cys	Val	Pro	Met	Val	Arg	Asp	Leu	
		195					200					205				
Leu	Arg	Tyr	Phe	Tyr	Ser	Arg	Arg	Ile	Asp	Ile	Thr	Leu	Ser	Ser	Val	
	210					215					220					
Lys	Cys	Phe	His	Lys	Leu	Ala	Ser	Ala	Tyr	Gly	Ala	Arg	Gln	Leu	Gln	
225					230					235					240	
Gly	Tyr	Cys	Ala	Ser	Leu	Phe	Ala	Ile	Leu	Leu	Pro	Gln	Asp	Pro	Ser	
			245						250					255		
Phe	Gln	Met	Pro	Leu	Asp	Leu	Tyr	Ala	Tyr	Ala	Val	Ala	Thr	Gly	Asp	
		260						265						270		
Ala	Leu	Leu	Glu	Lys	Leu	Cys	Leu	Gln	Phe	Leu	Ala	Trp	Asn	Phe	Glu	
	275						280						285			
Ala	Leu	Thr	Gln	Ala	Glu	Ala	Trp	Pro	Ser	Val	Pro	Thr	Asp	Leu	Leu	
	290					295					300					
Gln	Leu	Leu	Leu	Pro	Arg	Ser	Asp	Leu	Ala	Val	Pro	Ser	Glu	Leu	Ala	
305					310					315					320	
Leu	Leu	Lys	Ala	Val	Asp	Thr	Trp	Ser	Trp	Gly	Glu	Arg	Ala	Ser	His	
			325						330					335		
Glu	Glu	Val	Glu	Gly	Leu	Val	Glu	Lys	Ile	Arg	Phe	Pro	Met	Met	Leu	
		340						345					350			
Pro	Glu	Glu	Leu	Phe	Glu	Leu	Gln	Phe	Asn	Leu	Ser	Leu	Tyr	Trp	Ser	
		355					360						365			
His	Glu	Ala	Leu	Phe	Gln	Lys	Lys	Thr	Leu	Gln	Ala	Leu	Glu	Phe	His	
	370					375					380					
Thr	Val	Pro	Phe	Gln	Leu	Leu	Ala	Arg	Tyr	Lys	Gly	Leu	Asn	Leu	Thr	
385					390					395					400	
Glu	Asp	Thr	Tyr	Lys	Pro	Arg	Ile	Tyr	Thr	Ser	Pro	Thr	Trp	Ser	Ala	
				405					410					415		

Phe Val Thr Asp Ser Ser Trp Ser Ala Arg Lys Ser Gln Leu Val Tyr  
420 425 430

Gln Ser Arg Arg Gly Pro Leu Val Lys Tyr Ser Ser Asp Tyr Phe Gln  
435 440 445

Ala Pro Ser Asp Tyr Arg Tyr Tyr Pro Tyr Gln Ser Phe Gln Thr Pro  
450 455 460

Gln His Pro Ser Phe Leu Phe Gln Asp Lys Arg Val Ser Trp Ser Leu  
465 470 475 480

Val Tyr Leu Pro Thr Ile Gln Ser Cys Trp Asn Tyr Gly Phe Ser Cys  
485 490 495

Ser Ser Asp Glu Leu Pro Val Leu Gly Leu Thr Lys Ser Gly Gly Ser  
500 505 510

Asp Arg Thr Ile Ala Tyr Glu Asn Lys Ala Leu Met Leu Cys Glu Gly  
515 520 525

Leu Phe Val Ala Asp Val Thr Asp Phe Glu Gly Trp Lys Ala Ala Ile  
530 535 540

Pro Ser Ala Leu Asp Thr Asn Ser Ser Lys Ser Thr Ser Ser Phe Pro  
545 550 555 560

Cys Pro Ala Gly His Phe Asn Gly Phe Arg Thr Val Ile Arg Pro Phe  
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Tyr Leu Thr Asn Ser Ser Gly Val Asp  
580 585

<210> 22

<211> 574

<212> PRT

<213> Rattus sp.

<400> 22

Met Ala Leu Leu Trp Leu Leu Ser Val Phe Leu Leu Val Pro Gly Thr  
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Gln Gly Ala Lys Asp Gly Asp Met Arg Leu Val Asn Gly Ala Ser Pro  
20 25 30

Ser Glu Gly Arg Val Glu Ile Phe Tyr Arg Gly Arg Trp Gly Thr Leu  
35 40 45

Cys Asp Asn Leu Trp Asn Leu Leu Asp Ala His Val Phe Cys Arg Ala  
50 55 60

Leu Gly Tyr Asp Asn Ala Thr Pro Ala Leu Asn Arg Val Ala Phe Gly  
65 70 75 80

Pro Gly Lys Gly Pro Ile Met Leu Asp Glu Val Glu Cys Thr Gly Asn  
85 90 95

Glu Ser Ser Leu Ala Asn Cys Ser Ser Leu Gly Trp Met Val Ser His  
100 105 110

Cys Arg His Glu Lys Asp Ala Gly Val Val Cys Ser Asn Asp Ser Arg  
115 120 125

Gly Ile His Ile Leu Asp Leu Ser Gly Glu Leu Pro Asp Ser Leu Gly  
130 135 140

Gln Ile Phe Asp Ser Gln Gln Asp Cys Asp Leu Phe Ile Gln Val Thr  
145 150 155 160

Gly Gln Gly His Gly Asp Leu Ser Leu Cys Ala His Thr Leu Ile Leu  
165 170 175

Arg Thr Asn Pro Glu Ala Gln Ala Leu Trp Gln Val Val Gly Ser Ser  
180 185 190

Val Ile Met Arg Val Asp Ala Glu Cys Met Pro Val Val Arg Asp Phe  
195 200 205

Leu Arg Tyr Phe Tyr Ser Arg Arg Ile Glu Val Ser Met Ser Ser Val  
210 215 220

Lys Cys Leu His Lys Leu Ala Ser Ala Tyr Gly Ala Thr Glu Leu Gln  
225 230 235 240

Gly Tyr Cys Gly Arg Leu Phe Val Thr Leu Leu Pro Gln Asp Pro Thr

	245		250		255
Phe His Thr	Pro Leu Glu Leu Tyr Glu Tyr Ala Gln Ala Thr Gly Asp				
	260		265		270
Ser Val Leu Glu Asp Leu Cys Val Gln Phe Leu Ala Trp Met Phe Glu					
	275		280		285
Pro Leu Thr Gln Ala Glu Ser Trp Leu Ser Val Pro Asn Ala Leu Ile					
	290		295		300
Gln Ala Leu Leu Pro Lys Ser Glu Leu Ala Val Ser Ser Glu Leu Asp					
305		310		315	320
Leu Leu Lys Ala Val Asp Gln Trp Ser Thr Ala Thr Gly Ala Ser His					
	325		330		335
Gly Asp Val Glu Arg Leu Val Glu Gln Ile Arg Phe Pro Met Met Leu					
	340		345		350
Pro Gln Glu Leu Phe Glu Leu Gln Phe Asn Leu Ser Leu Tyr Gln Gly					
	355		360		365
His Gln Ala Leu Phe Gln Arg Lys Thr Met Glu Ala Leu Glu Phe His					
	370		375		380
Thr Val Pro Leu Lys Val Leu Ala Lys Tyr Arg Ser Leu Asn Leu Thr					
385		390		395	400
Glu Asp Val Tyr Lys Pro Arg Leu Tyr Thr Ser Ser Thr Trp Ser Ser					
	405		410		415
Leu Leu Met Ala Gly Ala Trp Ser Thr Gln Lys Tyr Lys Tyr Arg Gln					
	420		425		430
Phe Tyr Thr Tyr Asn Tyr Gly Ser Gln Ser Arg Tyr Ser Ser Tyr Gln					
	435		440		445
Asn Phe Gln Thr Pro Gln His Pro Ser Phe Leu Phe Lys Asp Lys Leu					
	450		455		460
Ile Ser Trp Ser Ala Thr Tyr Leu Pro Thr Ile Gln Ser Cys Trp Asn					
465		470		475	480

Tyr Gly Phe Ser Cys Thr Ser Asp Glu Leu Pro Val Leu Gly Leu Thr  
485 490 495

Thr Ser Ser Tyr Ser Asn Pro Thr Ile Gly Tyr Glu Asn Arg Val Leu  
500 505 510

Ile Leu Cys Gly Gly Tyr Ser Val Val Asp Val Thr Ser Phe Ile Gly  
515 520 525

Ser Lys Ala Pro Ile Pro Gly Thr Gln Glu Thr Asn Ser Ser Lys Thr  
530 535 540

Pro Ser Leu Phe Pro Cys Ala Ser Gly Ala Phe Ser Ser Phe Arg Val  
545 550 555 560

Val Ile Arg Pro Phe Tyr Leu Thr Asn Ser Thr Asp Thr Glu  
565 570

<210> 23

<211> 577

<212> PRT

<213> Murinae gen. sp.

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20 25 30

Asn Glu Gly Arg Val Glu Ile Phe Tyr Arg Gly Arg Trp Gly Thr Val  
35 40 45

Cys Asp Asn Leu Trp Asn Leu Leu Asp Ala His Val Val Cys Arg Ala  
50 55 60

Leu Gly Tyr Glu Asn Ala Thr Gln Ala Leu Gly Arg Ala Ala Phe Gly  
65 70 75 80

Pro Gly Lys Gly Pro Ile Met Leu Asp Glu Val Glu Cys Thr Gly Thr  
85 90 95

Glu Ser Ser Leu Ala Ser Cys Arg Ser Leu Gly Trp Met Val Ser Arg  
100 105 110

Cys Gly His Glu Lys Asp Ala Gly Val Val Cys Ser Asn Asp Thr Thr  
115 120 125

Gly Leu His Ile Leu Asp Leu Ser Gly Glu Leu Ser Asp Ala Leu Gly  
130 135 140

Gln Ile Phe Asp Ser Gln Gln Gly Cys Asp Leu Phe Ile Gln Val Thr  
145 150 155 160

Gly Gln Gly Tyr Glu Asp Leu Ser Leu Cys Ala His Thr Leu Ile Leu  
165 170 175

Arg Thr Asn Pro Glu Ala Gln Ala Leu Trp Gln Val Val Gly Ser Ser  
180 185 190

Val Ile Met Arg Val Asp Ala Glu Cys Met Pro Val Val Arg Asp Phe  
195 200 205

Leu Arg Tyr Phe Tyr Ser Arg Arg Ile Glu Val Ser Met Ser Ser Val  
210 215 220

Lys Cys Leu His Lys Leu Ala Ser Ala Tyr Gly Ala Thr Glu Leu Gln  
225 230 235 240

Asp Tyr Cys Gly Arg Leu Phe Ala Thr Leu Leu Pro Gln Asp Pro Thr  
245 250 255

Phe His Thr Pro Leu Asp Leu Tyr Ala Tyr Ala Arg Ala Thr Gly Asp  
260 265 270

Ser Met Leu Glu Asp Leu Cys Val Gln Phe Leu Ala Trp Asn Phe Glu  
275 280 285

Pro Leu Thr Gln Ser Glu Ser Trp Ser Ala Val Pro Thr Thr Leu Ile  
290 295 300

Gln Ala Leu Leu Pro Lys Ser Glu Leu Ala Val Ser Ser Glu Leu Asp  
305 310 315 320

Leu Leu Lys Ala Val Asp Gln Trp Ser Thr Glu Thr Ile Ala Ser His  
325 330 335



Glu Asp Ile Glu Arg Leu Val Glu Gln Val Arg Phe Pro Met Met Leu  
340 345 350

Pro Gln Glu Leu Phe Glu Leu Gln Phe Asn Leu Ser Leu Tyr Gln Asp  
355 360 365

His Gln Ala Leu Phe Gln Arg Lys Thr Met Gln Ala Leu Glu Phe His  
370 375 380

Thr Val Pro Val Glu Val Leu Ala Lys Tyr Lys Gly Leu Asn Leu Thr  
385 390 395 400

Glu Asp Thr Lys Tyr Pro Arg Leu Tyr Thr Ser Ser Thr Trp Ser Ser  
405 410 415

Leu Val Met Ala Ser Thr Trp Arg Ala Gln Arg Tyr Glu Tyr Asn Arg  
420 425 430

Tyr Asn Gln Leu Tyr Thr Tyr Gly Tyr Gly Ser Val Ala Arg Tyr Asn  
435 440 445

Ser Tyr Gln Ser Phe Gln Thr Pro Gln His Pro Ser Phe Leu Phe Lys  
450 455 460

Asp Lys Gln Ile Ser Trp Ser Ala Thr Tyr Leu Pro Thr Met Gln Ser  
465 470 475 480

Cys Trp Asn Tyr Gly Phe Ser Cys Thr Ser Asn Glu Leu Pro Val Leu  
485 490 495

Gly Leu Thr Thr Ser Ser Tyr Ser Asn Pro Thr Ile Gly Tyr Glu Asn  
500 505 510

Arg Val Leu Ile Leu Cys Gly Gly Tyr Ser Val Val Asp Val Thr Ser  
515 520 525

Phe Glu Gly Ser Lys Ala Pro Ile Pro Thr Ala Leu Asp Thr Asn Ser  
530 535 540

Ser Lys Thr Pro Ser Leu Phe Pro Cys Ala Ser Gly Ala Phe Ser Ser  
545 550 555 560

Phe Arg Val Val Ile Arg Pro Phe Tyr Leu Thr Asn Ser Thr Asp Met

565

570

575

Val